HEALTH AND SAFETY PLAN

Former Cedar Chemicals Facility
Helena – West Helena, Arkansas

Prepared for:

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) (including Attachments A and B) provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the Former Cedar Chemical Company in West Helena, Arkansas. This HASP also identifies chemical and physical hazards known to be associated with the AECOM-managed activities addressed in this document.

1.1 GENERAL

The provisions of this HASP are mandatory for all AECOM personnel engaged in fieldwork associated with the environmental services being conducted at this site. A copy of this HASP and applicable SOPs will be maintained on-site. The Earth Tech Consolidated Safety, Health, and Environmental (SH&E) Manual is available for review at all times at:
http://etconnect.earthtech.com/sites/SHE_United_States/US_Operations_SHE_Manual/Shared%20Documents/Manual_for_US_Operations.aspx
Record keeping will be maintained in accordance with this HASP and the applicable Standard Operating Procedures (SOPs). In the event of a conflict between this HASP, the SOPs and federal, state, and local regulations, workers shall follow the most stringent/protective requirements.

1.2 POLICY STATEMENT

It is the policy of AECOM to provide a safe and healthy work environment for all of its employees. AECOM considers no phase of operations or administration is of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. At AECOM, we believe every accident and every injury is avoidable. We will take every reasonable step to reduce the possibility of injury, illness, or accident. This policy is detailed in SH&E 001, *Safety, Health, and Environmental Policy Statement.*
The practices and procedures presented in this HASP and any supplemental documents associated with this HASP are binding on all AECOM employees while engaged in the subject work. In addition, all site visitors shall abide by these procedures as the minimum acceptable standard for the work site. Operational changes to this HASP and supplements that could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of the AECOM Project Manager (PM) and the assigned AECOM Safety Professional.

1.3 REFERENCES

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), *Occupational Safety and Health Standards* (with special attention to Section 120, *Hazardous Waste Operations and Emergency Response*).
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, Publication No. 85-115, 1985.

The requirements in this HASP also conform to Earth Tech's Corporate Safety Program requirements as specified in Earth Tech's *Consolidated Safety, Health, and Environmental Manual*, a copy of which will be maintained on site at all times.

1.3.1 Earth Tech Safety, Health and Environmental Website

Earth Tech's Safety Website is located on the Earth Tech Corporate Intranet, and is available for all Earth Tech / AECOM employees as a resource for safety information, updates, and procedures. Project management and employees are encouraged to visit the website for key safety items and information, such as:

- The Earth Tech Employee Orientation,
- Defensive Driver Awareness Training (DDAT)
- Contact information for Earth Tech's Safety Department staff,
- Safety Forms,
- Safety Program Manuals,
- Safety Alerts and other communications,
- Accident, Injury, and Near-Miss Reporting Requirements,
- Links to safety and regulatory information,
- Training Resources,
- Ergonomics Information, and
- A feedback link to the Earth Tech Safety Director.

The website[1] is located at the following web address:

http://etonline.earthtech.com/etonline/healthsafety/

[1] Please note that the website can only be accessed when connected to Earth Tech's Wide-Area Network (e.g., via iPass).

2.0 SITE INFORMATION AND SCOPE OF WORK

The following is a summary of relevant data concerning the Former Cedar Chemical Company in West Helena, Arkansas and the work procedures to be performed. The Wormald Site Investigation Work Plan (SIWP; January 2009) prepared by AECOM as a companion document to this HASP provides significantly greater details concerning the planned work operations.

2.1 SITE INFORMATION

This section provides a general description and historical information associated with the site.

2.1.1 General Description

The Former Cedar Chemical Company site is located at 49 Phillips Road 311 in West Helena, Arkansas. The former Cedar Chemical Corporation (CCC) Helena-West Helena Plant is located just to the south of the city of Helena-West Helena, in Phillips County, Arkansas. The Facility consists of approximately 48 acres located within the Helena-West Helena Industrial Park, approximately 1.25 miles southwest of the intersection of U.S. Highway 49 and State Highway 242. A site location map is included as Figure 2-1.

The Former operational portion of the property is divided into two major areas: (1) the manufacturing area, to the north of Industrial Park Road, and (2) the wastewater treatment system area, to the south of Industrial Park Road. Of the 48 acres, approximately 40 acres comprise the former manufacturing area of the facility, and are fenced. The remaining 8 acres contain the wastewater treatment ponds.

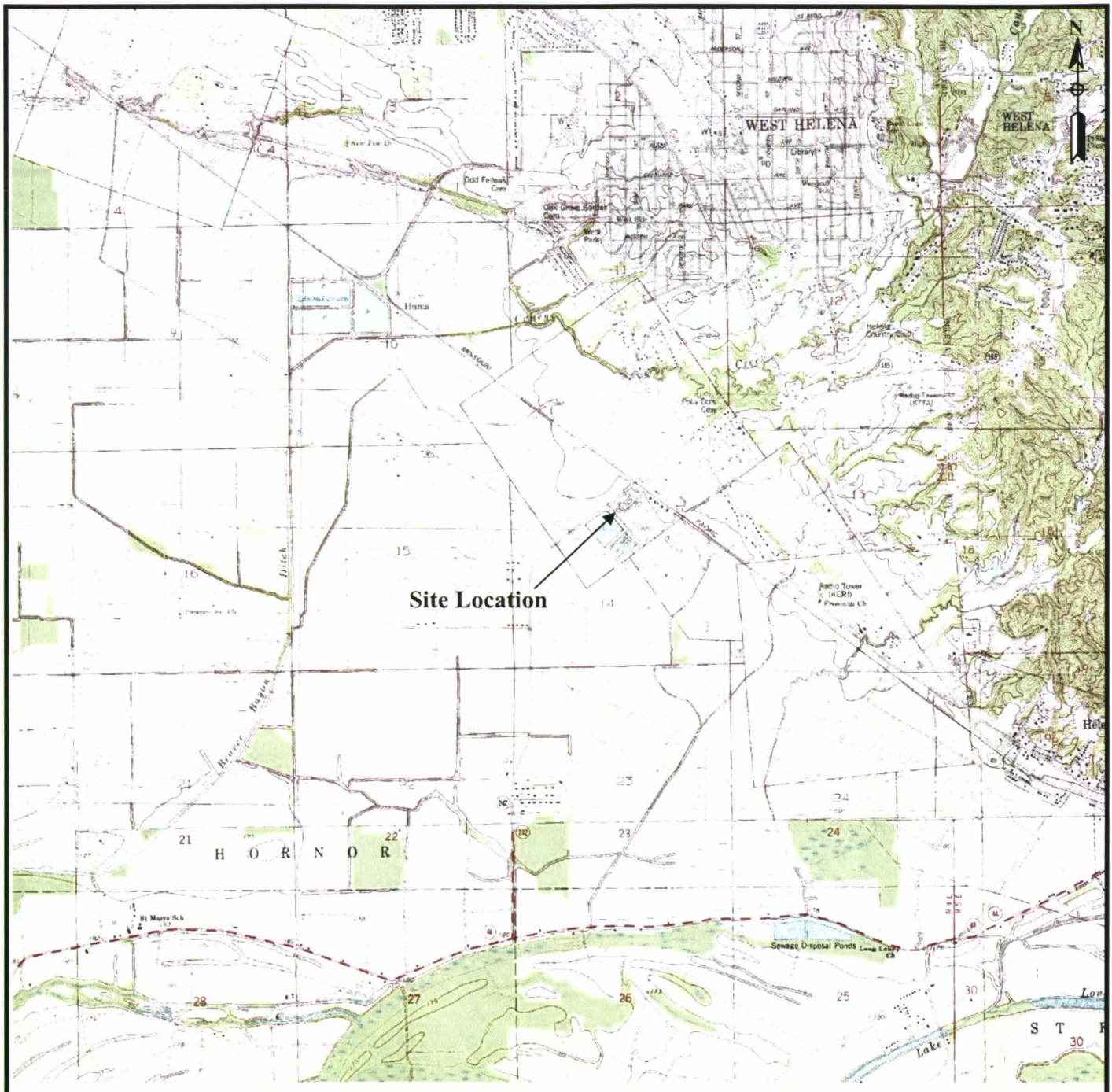
This Wormald SIWP (AECOM, January 2009) includes a description of proposed soil sample locations, environmental sampling techniques, and the analytical test method. Also, described herein are the procedures required for field operations, environmental sampling, equipment decontamination, investigation-derived waste (IDW) management, Quality Assurance/Quality Control (QA/QC), documentation, and a proposed schedule for the implementation of this SIWP.

2.1.2 Site Background/History

Prior to 1970, the land where the site now exists was used for agriculture purposes (EnSafe, 1996). The plant was constructed in the early 1970s, and operated by a number of parties until its closure under bankruptcy in 2002. ADEQ assumed control of the site on October 12, 2002. During its operational life, the Facility manufactured various agricultural chemicals, including insecticides, herbicides, polymers, and organic intermediates. Plant processes were batch operations, with seasonal production fluctuations and the frequent introduction of new products. The plant also produced a variety of chemicals on a toll manufacturing basis for a number of customers.

2.1.3 Previous Investigations

Several previous investigations of the Site were completed between 1985 and 2002. These investigations are documented in previous reports and outlined in detail in the Current Conditions Report (Geomatrix, 2007). AMEC Geomatrix conducted Facility Investigation (FI)



Source: TerraServer DRG (West Helena, Arkansas, United States)

AECOM

Figure 2-1
Site Location Map
Cedar Chemical Facility
Helena-West Helena, Arkansas

January 2009 104336

activities at the Site between January 2008 and October 2008. A summary of the FI activities is provided in the inset table below.

Investigation Activity Description	Date
Baseline Groundwater Sample – on-Site monitoring wells	January 2008
Direct Push Technology (DPT) Soil Boring Installation – 40 DPT soil borings installed and sampled; 10 perched zone temporary monitoring wells installed	March/April 2008
Groundwater Sampling – perched zone temporary monitoring wells and 2 off-Site alluvial aquifer monitoring wells	March/April 2008
Monitoring Well Installation – 14 perched zone monitoring wells and 2 alluvial aquifer monitoring wells installed on-Site; 4 alluvial aquifer monitoring wells installed off-Site	June/July 2008
Drum Vault Sampling – 4 test pits installed in the Drum Vault; 4 composite soil samples collected	July 2008
Aquifer Testing	July 2008
Site-wide Groundwater Sampling	July 2008
Site-wide Groundwater Sampling	September 2008
Additional Off-Site Alluvial Aquifer Monitoring Well Installation - installation and sampling of 4 off-Site alluvial aquifer monitoring wells	October 2008

2.2 SCOPE OF WORK

AECOM is to conduct a soils investigation with assistance from Tri-State Testing Services. Investigation activities will focus on the assessment of soil quality in the vicinity of the on-site storm water ditches (Site 3). The following activities will be performed to meet this objective:

- Site reconnaissance and field work preparation, including but not limited to obtaining permits and access agreements for invasive activities, scheduling subcontractors, marking sample locations and perform utility clearance.
- Installation of five soil borings for the collection of up to seven primary soil samples for dinoseb analysis.
- Collect horizontal and vertical coordinates from soil sample locations.

2.2.1 Collection of Soil Samples

AECOM has subcontracted Tri-State Testing Services to conduct the site investigation activities through the use of a geo-probe drill rig. The AECOM Environmental Professional on-site (Keith Owens) will provide oversight for the soils investigation activities and collect the respective environmental samples. The overall work will be directed by AECOM, but the specific details related to drilling operations and safe drilling practices remains the responsibility of Tri-State Testing Services. The geo-probe operator will use a combination of hammering and direct push

to reach the target sample locations for soil samples. The historical subsurface soil sample 3SB-6 where dinoseb was detected at a concentration of 13,000 milligrams per kilogram (mg/kg) will be the focus of the investigation.

2.2.2 Additional Work Operations

The following additional tasks will also be performed as necessary in support of planned site activities:

Mobilization/Demobilization: Mobilization and demobilization represent limited pre and post-task activities. These activities include driving to and from the site; initial site preparation; and post-work activities, such as removing sampling materials and general housekeeping.

3.0 PROJECT HEALTH AND SAFETY ORGANIZATION

3.1 PROJECT MANAGER [LESLEE ALEXANDER]

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The specific safety responsibilities for the PM are listed in Section 2.2 of SH&E 001, *Operational SH&E Structure and Responsibilities*. The PM will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations.

3.2 SAFETY PROFESSIONAL [RUSSELL REYNOLDS]

The Safety Professional is the member of the AECOM Safety, Health and Environmental Department assigned to oversee health and safety requirements for the project and provide any needed technical support. The Safety Professional will be the first point-of-contact for all of the project's health and safety matters. Duties include the following:

- Approving this HASP and any required changes.
- Approving the designated Site Safety Officer (SSO).
- Reviewing all personal exposure monitoring results.
- Investigating any reported unsafe acts or conditions.

3.3 SITE SUPERVISOR [KEITH OWENS]

The site supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans. The PM may act as the site supervisor while on site.

3.3.1 Responsibilities

The site supervisor is responsible to:

- Discuss deviations from the work plan with the SSO and PM.
- Discuss safety issues with the PM, SSO, and field personnel.
- Assist the SSO with the development and implementation of corrective actions for site safety deficiencies.
- Assist the SSO with the implementation of this HASP and ensuring compliance.
- Assist the SSO with inspections of the site for compliance with this HASP and applicable SOPs.

3.3.2 Authority

The site supervisor has authority to:

- Verify that all operations are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the SSO, the Safety Professional, and the PM.

3.3.3 Qualifications

In addition to being Hazardous Waste Operations and Emergency Response (HAZWOPER)-qualified (see Section 4.1), the Site Supervisor is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

3.4 SITE SAFETY OFFICER [KEITH OWENS]

3.4.1 Responsibilities

The SSO is responsible to:

- Update the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the Safety Professional.
- Be aware of changes in Safety Policy. Changes are posted on the AECOM / Earth Tech Safety Website (see Section 1.3 of this HASP).
- Monitor the lost time incidence rate for this project and work toward improving it.
- Inspect the site for compliance with this HASP and the SOPs using the appropriate audit inspection checklist provided by an Earth Tech Safety Professional.
- Work with the site supervisor and PM to develop and implement corrective action plans to correct deficiencies discovered during site inspections. Deficiencies will be discussed with project management to determine appropriate corrective action(s).
- Contact the Safety Professional for technical advice regarding safety issues.
- Provide a means for employees to communicate safety issues to management in a discreet manner (i.e., suggestion box, etc.).
- Determine emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation.
- Ensure that all site personnel and visitors have received the proper training and medical clearance prior to entering the site.
- Establish any necessary controlled work areas (as designated in this HASP or other safety documentation).
- Present tailgate safety meetings and maintain attendance logs and records.
- Discuss potential health and safety hazards with the Site Supervisor, the Safety Professional, and the PM.
- Select an alternate SSO by name and inform him/her of their duties, in the event that the SSO must leave or is absent from the site.

3.4.2 Authority

The SSO has authority to:

- Verify that all operations are in compliance with the requirements of this HASP.
- Issue a "Stop Work Order" under the conditions set forth in Section 4.7 of this HASP.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the Safety Professional and the PM.

3.4.3 Qualifications

In addition to being HAZWOPER-qualified (see Section 4.1), the SSO is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

3.5 EMPLOYEES

3.5.1 Employee Responsibilities

Responsibilities of employees associated with this project include, but are not limited to:

- Understanding and abiding by the policies and procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete.
- Providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies.
- Notifying the SSO, in writing, of unsafe conditions and acts.

3.5.2 Employee Authority

The health and safety authority of each employee assigned to the site includes the following:

- The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood.
- The right to refuse to work on any site or operation where the safety procedures specified in this HASP or other safety policies are not being followed.
- The right to contact the SSO or the Safety Professional at any time to discuss potential concerns.

3.6 SUBCONTRACTORS

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in SH&E 207, *Contractor and Subcontractor SH&E Requirements*. Each AECOM subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required personnel protective equipment (PPE).
AECOM considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, in order to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to AECOM for review prior to the start of onsite activities, if required.
Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the AECOM PM or the Site Supervisor prior to beginning work operations. The Site Supervisor or authorized representative has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

3.7 VISITORS

Authorized visitors (e.g., client representatives, regulators, AECOM management staff, etc.) requiring entry to any work location on the site will be briefed by the PM on the hazards present

at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and personal protective equipment which hare required for entry to any controlled work area; visitors must comply with these requirements at all times.

Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

4.0 SAFETY PROGRAMS

4.1 HAZWOPER QUALIFICATIONS

Personnel performing work at the job site must be qualified as HAZWOPER workers (unless otherwise noted in specific THAs or by the SSO), and must meet the medical monitoring and training requirements specified in the following safety procedures:

- SH&E 202, *Safety Meetings*
- SH&E 115, *Hazard Communication Program*
- SH&E 114, *Safety Training Programs*
- SH&E 301, *Hazardous Waste Operations (HAZWOPER)*

Personnel must have successfully completed training meeting the provisions established in 29 CFR 1910.120 (e)(2) and (e)(3) (40-hour initial training). As appropriate, personnel must also have completed annual refresher training in accordance with 29 CFR 1910.120 (e)(8); each person's most recent training course must have been completed within the previous 365 days. Personnel must also have completed a physical exam in accordance with the requirements of 29 CFR 1910.120 (f), where the medical evaluation includes a judgment of the employee's ability to use respiratory protective equipment and to participate in hazardous waste site activities. These requirements are further discussed in SH&E 301, *Hazardous Waste Operations (HAZWOPER)*.
If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document specific to the particular materials present.

4.2 SITE-SPECIFIC SAFETY TRAINING

All personnel performing field activities at the site will be trained in accordance with SH&E 114, *Safety Training Programs*. For this project, training will include the requirements specified in the following:

1. SH&E 202, *Safety Meetings*
2. SH&E 112, *Respiratory Protection Program*
3. SH&E 115, *Hazard Communication Program*
4. SH&E 301, *Hazardous Waste Operations (HAZWOPER)*
5. SH&E 403 – *Drilling*
6. SH&E 404 – *Manual Lifting*
7. SH&E 506 – *Manual Hand Tools*
8. SH&E 508 - *Fire Extinguishers*
9. SH&E 513 - *Heavy Equipment*

In addition to the general health and safety training programs, personnel will be:

- Instructed on the contents of applicable portions of this HASP and any supplemental health and safety information developed for the tasks to be performed.
- Informed about the potential routes of exposure, protective clothing, precautionary measures, and symptoms or signs of chemical exposure and heat stress.
- Made aware of task-specific physical hazards and other hazards that may be encountered during site work. This includes any client-specific required training for health and safety.
- Made aware of fire prevention measures, fire extinguishing methods, and evacuation procedures.

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter. Training will be conducted by the SSO (or his/her designee) and will be documented on the form attached to SH&E 202, *Safety Meetings*.

4.3 HAZARD COMMUNICATION

Section 5.2 provides information concerning the materials that may be encountered as environmental contaminants during the work activities. In addition, any organization wishing to bring any hazardous material onto any AECOM -controlled work site must first provide a copy of the item's Material Safety Data Sheet (MSDS) to the SSO for approval and filing (the SSO will maintain copies of all MSDSs on site). MSDSs may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable. In accordance with the requirements of SH&E 115, *Hazard Communication Program*, all personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all MSDSs.

All containers on site shall be properly labeled to indicate their contents. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

4.4 HAZARDOUS, SOLID, OR MUNICIPAL WASTE

If hazardous, solid, and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations.

4.5 GENERAL SAFETY RULES

All site personnel shall adhere to SH&E 201, *General Safety Rules*, during site operations. In addition, the housekeeping, sanitation, and personal hygiene requirements in SH&E 208, *General Housekeeping, Hygiene, and Sanitation* will observed. Specific excerpts from SH&E 208 are listed below.

4.5.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.5.2 Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any Earth Tech site.

4.5.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply meeting the following requirements will be utilized:

Potable Water - An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use

cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.

Non-Potable Water - Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

Non-Potable Water
Not Intended for Drinking Water Consumption

Toilet Facilities: A minimum of one toilet will be provided for every 20 personnel on site, with separate toilets maintained for each sex except where there are less than 5 total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.

Washing Facilities: Employees will be provided washing facilities (e.g., buckets with water and Alconox) at each work location. The use of water and hand soap (or similar substance) will required by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

4.5.4 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress. For additional requirements, refer to SH&E 124, *Heat Stress Prevention Program*, and SH&E 125, *Cold Stress Prevention Program.*

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid setting. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in SH&E 124, *Heat Stress Prevention Program.*

4.5.4.1 Responding to Heat-Related Illness

The guidance below will be used in identifying and treating heat-related illness.

Table 4-1: Identification and Treatment of Heat-Related Illness

Type of Heat-Related Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	• Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. • If an air-conditioned spot is available, this is an ideal break location. • Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.	• Immediately remove the victim from the work area to a shady or cool area with good air circulation (avoid drafts or sudden chilling). • Remove all protective outerwear. • Call a physician. • Treat the victim for shock. (Make the victim lie down, raise his or her feet 6–12 inches, and keep him or her cool by loosening all clothing). • If the victim is conscious, it may be helpful to give him or her sips of water. • Transport victim to a medical facility as soon as possible.
Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly.	• Immediately evacuate the victim to a cool and shady area. • Remove all protective outerwear and as much personal clothing as decency permits. • Lay the victim on his or her back with the feet slightly elevated. • Apply cold wet towels or ice bags to the head, armpits, and thighs. • Sponge off the bare skin with cool water or rubbing alcohol, if available. • The main objective is to cool without chilling the victim. • Give no stimulants or hot drinks. • Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.

4.5.4.2 Solar Protection

To protect against exposure to solar radiation, workers will observe the following requirements:

1. All workers will wear sunglass-type safety glasses at all times when working outdoors during daylight hours.
2. Workers will utilize a commercial sunblock with a minimum solar protection factor (SPF) of 15.

4.6 USE OF UTILITY KNIVES OR OTHER OPEN-BLADED CUTTING TOOLS

All use of utility knives with manually retracting blades (including "pocket knives" and other "collapsible, open-blade cutting tools") is no longer permitted on any AECOM jobsite, unless specifically authorized on a task-specific basis in this HASP and associated THA. The only acceptable type of utility knife will be those with automatically retracting blades. Other "cutters" must be safety cutting devices equipped with a completely enclosed and/or guarded blade. Additional recommendations regarding the use of cutting tools can be found in SH&E 506, *Manual Hand Tools*.

4.7 EQUIPMENT SAFETY CARDS

Equipment safety cards have been produced by the SH&E Department for review prior to operating portable mechanized equipment (e.g., chainsaws, chop saws, power washers, etc.). Equipment safety card requirements are identified in SH&E 516, *Equipment Safety Cards*. Equipment safety cards are to be used as a point of reference prior to using the specified piece of equipment. The cards should be used in conjunction with the manufacturers operating instructions. Personnel must be adequately trained in the tools usage prior to operation, thus using the card as a reminder or THA for additional safe operation. The cards are not a substitute for training, which at a minimum, must consists of having an observed skill set indicating good working knowledge and equipment operation time.

4.8 STOP WORK AUTHORITY

All employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions. Whenever the SSO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the SSO is authorized and required to stop work, which shall be immediately binding on all affected AECOM employees and subcontractors.

Upon issuing the stop work order, the SSO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Safety Professional has concurred that workplace conditions meet acceptable safety standards.

4.9 CLIENT SPECIFIC SAFETY REQUIREMENTS

The client has specified that work conducted on-site must be compliant with the requirements set forth within this HASP.

5.0 HAZARD ASSESSMENT

5.1 TASK HAZARD ANALYSIS

Task hazard analysis (THA) is a technique used to identify hazards and hazard controls associated with a specific job function. THAs focus on the relationship between the workers, the task, the resources required to complete the task, and the work environment. These variables must be evaluated to identify the potential hazards associated with the task. Once identified, steps can be taken to eliminate, reduce, or control the hazards to an acceptable risk level. Guidelines for developing THAs are located in SH&E 204, *Task Hazard Analyses*.

Section 2.2 describes the work activities anticipated to be performed during this project. Individual THAs for the tasks associated with this work can be found in Attachment A.

THA's shall include but not be limited to:

- Soil Sampling
- Mobilization/Demobilization

5.1.1 Unanticipated Work Activities/Conditions

Operations at the site may require additional tasks not identified in Section 2.2 or addressed in Attachment A THAs. Before performing any task not covered in this HASP a THA must be prepared, and approved by the Safety Professional.

5.2 ENVIRONMENTAL CONTAMINANT EXPOSURE HAZARDS

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical and radiological hazards known or suspected to be present on site. Hazards associated with chemical products brought to the site during work operations are addressed separately, under the Hazard Communication process described in Section 4.3.

Exposure symptoms and applicable first aid information for each suspected site contaminant listed in Section 2 are located in the following subsections.

5.2.1 Heavy Metals

As a group, the heavy metals (including lead, chromium, and cadmium) are toxic to a number of organs and organ systems in the body including the liver, kidneys, blood-forming organs (primarily located in the bones), and the central nervous system (CNS). Acute exposure to metals can produce symptoms such as stomach distress and vomiting, mental confusion and sluggishness, heart palpitations, breathing difficulties, and renal (kidney) failure. Chronic exposures can be characterized by deterioration in function of the liver and kidneys, CNS degradation, and abnormal changes in blood cell counts (especially white blood cells). Exposure to chromium may also lead to formation of lung and gastric cancers.

The primary route of exposure to heavy metals of concern during this project is contact with contaminated soils, which can lead to entry through open wounds or contamination and ingestion of food. Preventing this route of exposure necessitates the use of dust control measures and appropriate protective clothing and decontamination procedures.

5.2.2 Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs)

Volatile Organic Compounds (VOCs) - Volatile Organic Compounds are organic chemicals that have a high vapor pressure and easily form vapors at normal temperature and pressure. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, pharmaceuticals, and refrigerants.

Semi Volatile Organic Compounds (SVOCs) - Semi Volatile Organic Compounds are composed primarily of carbon and hydrogen atoms that have boiling points greater than 200°C. Common SVOCs include PAHs (Polynuclear aromatic hydrocarbons). Polynuclear aromatic hydrocarbons (PAHs) are produced during combustion events due to inadequate oxidation of fuel. PAHs in the pure state are yellowish crystalline solids. They are found in coal tar and in products of incomplete combustion. These chemicals have varying degrees of potency for causing cancer, with Benzo(a)pyrene being among the most potent. PAHs are evaluated collectively as coal tar pitch volatiles. Coal tar pitch volatiles may cause photosensitization and a rash where sunlight strikes the skin. Exposure may also cause cancer of lungs, skin, bladder, or kidneys. Benzo(b)fluoranthene, Benzo(j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, chrysene, and Indeno(1,2,3-cd)pyrene have been identified as carcinogenic.
This information on PAH compounds is presented for site contaminant awareness. While the potential for site personnel sustaining significant inhalation exposures to volatilize PAH compounds during this project's site activities is minimal, there is the potential for inhalation of PAH-contaminated dust, and handling of contaminated soil presents skin exposure hazards. Use of dust-suppression techniques (as appropriate) and the proper use of air-purifying respirators equipped with P100 cartridges and chemically-protective gloves will adequately protect personnel.

5.2.3 Dinoseb

Dinoseb is a phenolic compound that was primarily used as herbicide agent. Dinoseb was banned by the EPA in 1986. Dinoseb has a propensity to be easily absorbed by the skin and is considered hazardous through the routes of ingestion and absorption via dermal exposure. It is highly toxic to fish and birds. The use of skin protection (e.g., chemically protective gloves) is required when handling potential or confirmed contaminated materials.

5.2.4 Pesticides

As with PAHs, pesticide compounds are solids at room temperature, and most are not readily absorbed through the skin without the aid of a solvent vehicle. Different classes of pesticides affect various organ systems: Organophosphorous pesticides (e.g., parathion) affect the central nervous system by inhibiting the function of enzyme acetylcholinesterase. Organichlorine pesticides (e.g., lindane) are also neurotoxins, however they function by stimulation of CNS activity. Carbamates (e.g., aldicarb) function in a similar manner to oranophsosphorous comounds, by inhibition of acetylcholinesterase function. Other classes of pesticide compounds are primarily used as herbicide agents, and have only limited health effects in man.

5.2.5 Assessment of Exposure Hazards

Inhalation – Shallow surface soil sampling produces little to no spoils, which in turn minimizes the potential for airborne release of contaminants. Exposure via inhalation is very limited through the work practices and engineering controls being used. Appropriate dust and fugitive emission controls, and the use of appropriate PPE will greatly minimize the potential for exposure.

Skin Contact – Direct contact to skin will be minimized through engineering controls inherent to the operation, use of administrative controls, hand tools, and dermal protective equipment. Specifically, wear Nitrile gloves and wash hands thoroughly with cleaning agent before and after working in EZ.

Ingestion – There should be no ingestion hazards for these hazards provided that work practices/engineering controls, PPE, and decontamination procedures are followed. For emergency situations please see section 9.2 for emergency contact information.

5.3 PHYSICAL HAZARDS

During operations at the site, personnel may be exposed to a number of physical hazards. In general, the control of these hazards is discussed throughout the SH&E SOP 400 Series, *Task-Specific SH&E SOPs*. The following are prevalent physical hazards that may be encountered during site operations.

5.3.1 Utilities

Various forms of underground/overhead utility lines or pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. In addition, the drilling contractor will be instructed to proceed with caution through the first 5 feet below grade during intrusive activities. Should intrusive operations cause equipment to come into contact with utility lines, the SSO and an Earth Tech SP will be notified immediately. Work will be suspended until the applicable utility agency is contacted and the appropriate actions for the particular situations can be taken. For this site, the applicable agency is in Arkansas. The phone number is provided in the Emergency Contacts list found in Section 8. For additional requirements, refer to SH&E SOP 403, *Drilling*; and SH&E SOP 310, *Overhead Electrical Lines*.

5.3.2 Manual Lifting

Most materials associated with investigation and remedial activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use at least two people to lift, or roll/lift with your arms as close to the body as possible. Under no circumstances should any one person lift more than 49 pounds unassisted. For additional requirements, refer to SH&E SOP 404, *Manual Lifting*.

5.3.3 Drill Rig Equipment, Heavy Equipment, and Vehicle Operations

Drill rigs, heavy machinery equipment and site vehicles present serious hazards site personnel. Blind spots, failure to yield, and other situations may cause equipment/vehicles to come into contact with personnel. To reduce the possibility of contact between equipment/traffic and personnel, always adhere to the following:

- Personnel must wear a high visibility, reflective safety vest at all times when working near drill rigs and/or other vehicle traffic. Operators should avoid exposure to moving parts and have "tear away" vest as appropriate for rotating equipment.
- Personnel must always yield to equipment/vehicle traffic and stay clear of equipment/vehicle traffic. Always maintain eye contact with operators.
- When feasible, place barriers between work areas and equipment/vehicle traffic.
- Always ensure reverse warning alarms are working and louder than surrounding noise. **Any equipment fitted with a "kill switch" must be tested to verify its functionality.** Personnel must report and repair inoperative safety alarms or switches.

For additional requirements, refer to SH&E SOP 403, *Drilling* and SH&E SOP 513, *Heavy Equipment*. At no time are AECOM personnel to operate, or act as an assistant operator on a

drill rig or a piece of heavy machinery belonging to a subcontractor or that they have not been formally trained to operate.

5.3.4 Site Traffic Control

Narrow traffic lanes and heavy vehicular and pedestrian traffic can combine to create severe safety hazards. At a minimum, AECOM personnel are to obey the facility traffic control regulations at all times when on the site and barricade/cone work areas adjacent to these hazards.

5.3.5 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress. For additional requirements, refer to SH&E 124, *Heat Stress and Hot Weather Operations*, and SH&E 125, *Cold Stress and Winter Operations*.

HEAT STRESS

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid setting. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in SH&E 124, *Heat Stress and Hot Weather Operations*. Please see further information on heat stress in section 4.6.4.1.

5.3.5.1 Solar Protection

To protect against exposure to solar radiation, workers will observe the following requirements:

- All workers will wear sunglass-type safety glasses at all times when working outdoors during daylight hours.
- Workers will utilize a commercial sunblock with a minimum solar protection factor (SPF) of 15.

COLD STRESS

The objective is to prevent the deep body temperature from falling below 96.8° F and prevent cold injury to body extremities, refer to SH&E SOP 125, *Cold Stress and Winter Operations*.

5.3.6 Slips, Trips, Falls, and Protruding Objects

A variety of conditions may exist that may result in injury from slips, trips, falls, and protruding objects. Slips and trips may occur as a result of wet, slippery, or uneven walking surfaces. To prevent injuries from slips and trips, always keep work areas clean; keep walkways free of objects and debris; and report/clean up liquid spills. Serious injuries may occur as a result of falls from elevated heights. Always wear fall protection while working at heights of 4 feet or greater above the next lower level. Protruding objects are any object that extends into the path of travel or working area that may cause injury when contacted by personnel. Always be aware of protruding objects and when feasible remove or label the protruding object with an appropriate warning.

5.3.7 Noise

Hazardous noise may be produced during site activities by heavy equipment, powered tools, and other equipment or operations. Refer to SH&E SOP 109, *Hearing Conservation Program* for requirements regarding hazardous noise and hearing protection.

5.3.8 Assessment of Exposure Hazards

Inhalation – Surface soil sampling produces little to no spoils, which in turn minimizes the potential for airborne release of contaminants. Appropriate dust and fugitive emission controls, as well as monitoring and the use of appropriate PPE will greatly minimize the potential for exposure.

Skin Contact – Direct contact to skin will be minimized through engineering controls inherent to the operation, use of administrative controls, hand tools, and dermal protective equipment. Specifically, wear Nitrile gloves and wash hands thoroughly with cleaning agent before and after working in EZ.

Ingestion – There should be no ingestion hazards for these hazards provided that work practices/engineering controls, PPE, and decontamination procedures are followed. For emergency situations please see section 9.2 for emergency contact information.

5.4 BIOLOGICAL HAZARDS

Contact with animals, insects, and plants can cause injury and illness to personnel. Care must be taken to ensure that these types of injuries are avoided. Some examples of biological hazards include:

- Wild animals, such as snakes, raccoons, squirrels, and rats. These animals not only can bite and scratch, but can carry transmittable diseases (e.g., rabies). Avoid the animals whenever possible. If bitten, go to the nearest medical facility.
- Insects such as mosquitoes, ticks, bees, and wasps. Mosquitoes can potentially carry and transmit the West Nile Virus or Eastern Equine Encephalitis (EEE). Ticks can transmit Lyme disease or Rocky Mountain Spotted Fever. Bees and wasps can sting by injecting venom, which causes some individuals to experience anaphylactic shock (an extreme allergic reaction). Whenever you will enter areas that provide a habitat for insects (e.g., grass areas, woods), wear light-colored clothing, long pants and shirt, and spray exposed skin areas with a DEET-containing repellent. Keep away from high grass wherever possible. Keep your eyes and ears open for bee and wasp nests. If bitten by insects, see a doctor if there is any question of an allergic reaction.
- Plants such as poison ivy and poison oak can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water.

5.5 RADIOLOGICAL HAZARDS

No Radiological Hazards are known to be present on this site.

6.0 ACTIVITY SPECIFIC REQUIREMENTS

6.1 SUPPLEMENTAL SAFETY PROCEDURES

As discussed in Section 5.0, personnel may be exposed to a variety of chemical, physical, and biological hazards resulting from task- or equipment-specific activities. The requirements for the control of many of these hazards is discussed in SOPs found in the 400 and 500 Series of the Consolidated Safety, Health, and Environmental Manual.

Specific procedures applicable to this project include:

- SH&E 403 - *Drilling*
- SH&E 404 - *Manual Lifting*
- SH&E 506 - *Manual Hand Tools*
- SH&E 508 - *Fire Extinguishers*
- SH&E 604 - *Decontamination*

6.2 EXPOSURE MONITORING PROCEDURES

Monitoring procedures will be employed during site characterization activities to assess employee exposure to chemical and physical hazards. Monitoring will consist primarily of onsite determination of various parameters (e.g., airborne contaminant concentrations and heat stress effects), but may be supplemented by more sophisticated monitoring techniques, if necessary.

6.2.1 Real-Time Exposure Measurement

Monitoring shall be performed within the work area on site in order to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE.

Table 6-1 specifies the real-time monitoring equipment, which will be used for this project.

Table 6-1: Monitoring Parameters and Equipment

INSTRUMENT	MANUFACTURER/MODEL*	SUBSTANCES DETECTED
Photo Ionization Detector (PID)	RAE Systems mini-RAE Photovac Microtip HNu Model Hnu (min. 10.2 eV bulb)	Volatile Organics

*Or similar unit, as approved by the Safety Professional

6.2.1.1 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. The concentration level (above background level) and the ability of the PPE to protect against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented prior to commencing activities at the specific work area.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of SSO or the Safety Professional.

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor, or dust emission.
- Change in work task that will increase the exposure or potential exposure to hazardous materials.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

No respiratory (Level C) upgrade is anticipated or scoped for this project. Implementation of Level C protection requires a site specific respiratory program and concurrence from the DSM. Engineering controls will be implemented or a stop work order will be executed if monitoring action levels can't be met.

6.2.1.2 Monitoring Procedures

PARAMETER	ZONE LOCATION AND MONITORING INTERVAL	RESPONSE LEVEL (ABOVE BACKGROUND)	RESPONSE ACTIVITY
VOCs (total by PID)	Breathing Zone, every 30 minutes during well development activities	<10 units	Continue work in required PPE and continue monitoring.
		>10 units (sustained for more than 5 minutes)	Cease work, exit, and contact the H&SP and PM.

Note: All VOC monitoring will be conducted using PID only.

6.2.1.3 Monitoring Equipment Calibration

All instruments used will be calibrated at the beginning and end of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations requiring monitoring for worker exposure or off-site migration of contaminants will be postponed or temporarily ceased until this requirement is completed.

6.2.1.4 Personal Sampling

Should site activities warrant performing personal sampling to better assess chemical exposures experienced by Earth Tech employees, the SSO, under the direction of a Certified Industrial Hygienist (CIH), will be responsible for specifying the monitoring required. Within five working days after the receipt of monitoring results, the CIH will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the project files.

Should the site activities warrant, the subcontractor will ensure its employees' exposures are quantified via the use of appropriate sampling techniques. The subcontractor shall notify the

employees sampled in accordance with health and safety regulations, and provide the results to the SSO for use in determining the potential for other employees' exposure.
NO PERSONAL SAMPLING IS ANTICIPATED FOR THIS PROJECT.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 PERSONAL PROTECTIVE EQUIPMENT

The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. SH&E 113, *Personal Protective Equipment (PPE)*, lists the general requirements for selection and usage of PPE. Table 7-1 lists the minimum PPE required during site operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in the individual THAs found in Attachment A.

By signing this HASP you are agreeing that you have been properly trained in the use, limitations, care and maintenance of the protective equipment you will use at this project. If you have not received training on the proper use, care, and, limitations of the PPE required for this project, please see the PM/SSO for the proper training prior to signing this HASP.

Table 7-1: Personal Protective Equipment

TYPE	MATERIAL	ADDITIONAL INFORMATION
Minimum PPE:		
Safety Vest	High-visibility	Must have reflective tape and be visible from all sides
Boots	Leather/Rubber	ANSI approved safety toe
Safety Glasses		ANSI Approved
Hard Hat		ANSI Approved
Work Uniform		No shorts/cutoff jeans or sleeveless shirts
Additional PPE:		
Hearing Protection	Ear plugs and/ or muffs	In hazardous noise areas
Leather Gloves		If working with sharp objects or powered equipment.
Protective Chemical Gloves	Nitrile Gloves	
Tyvek cover-alls	Tyvek in areas of known dinoseb soils contamination.	Contaminated PPE should be disposed of as IDW
Cold Weather Gear	Hard hat liner, hand warmers, insulated gloves	

7.2 DECONTAMINATION

All requirements for performing personal and equipment decontamination may be found in SH&E 604, *Decontamination.*

7.3 PPE DOFFING AND DONNING INFORMATION

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the booty and the underlying sturdy leather work boot, resulting

in significant cuts to the legs/ankles. Recommend using a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the booty, then proceed by manually tearing the material down to the sole of the booty for easy removal.

- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.
- Have a "buddy" check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.
- Never perform personal decontamination with a pressure washer.

8.0 SITE CONTROL

8.1 GENERAL

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

8.2 CONTROLLED WORK AREAS

Each HAZWOPER controlled work area will consist of the following three zones:

- Exclusion Zone: Contaminated work area.
- Contamination Reduction Zone: Decontamination area.
- Support Zone: Uncontaminated or "clean area" where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is accessible to the public (e.g., vendors, inspectors).

8.2.1 Exclusion Zone

The Exclusion Zone is the area where primary activities occur, such as sampling, remediation operations, installation of wells, cleanup work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities, and meeting the requirements specified in the applicable THA and Sections 4.1 and 4.2, will be allowed in an Exclusion Zone.

The extent of each area will be sufficient to ensure that personnel located at/beyond its boundaries will not be affected in any substantial way by hazards associated with sample collection activities. To meet this requirement, the following minimum distances will be used:

- **Soil Sampling**. Adequate clearance in all directions from the sampling location is required in order to accommodate personnel and sampling equipment.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the Exclusion Zone and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area, or all HAZWOPER-related work must cease. All personnel, equipment, and supplies that enter controlled-access areas must be decontaminated or containerized as waste prior to leaving (through the CRZ only).

8.2.2 Contamination Reduction Zone

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination. All sample collection equipment, including shovels, trowels, augers, and sample compositing bowls will be decontaminated between each sample using deionized water and detergent., Decontamination procedures are further explained in SH&E 604 and the site investigation workplan.

8.2.3 Support Zone

The Support Zone is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The Support Zone shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a Support Zone (if necessary) at the site before the commencement of site activities. The Support Zone would also serve as the entry point for controlling site access.

8.3 SITE ACCESS DOCUMENTATION

If implemented by the PM, all personnel entering the site shall complete the "Site Entry/Exit Log" located at the site trailer or primary site support vehicle.

8.3.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HASP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

1. A written confirmation must be received by Earth Tech documenting that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
2. Each visitor will be briefed on the hazards associated with the site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.
3. All visitors must be escorted by an Earth Tech employee.

If the site visitor requires entry to any Exclusion Zone, but does not comply with the above requirements, all work activities within the Exclusion Zone must be suspended. Until these requirements have been met, entry will not be permitted.

8.4 SITE SECURITY

The facility area is fenced and access to the site is controlled by site security personnel.

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the site.
- Prevent theft.
- Avoid interference with safe working procedures.

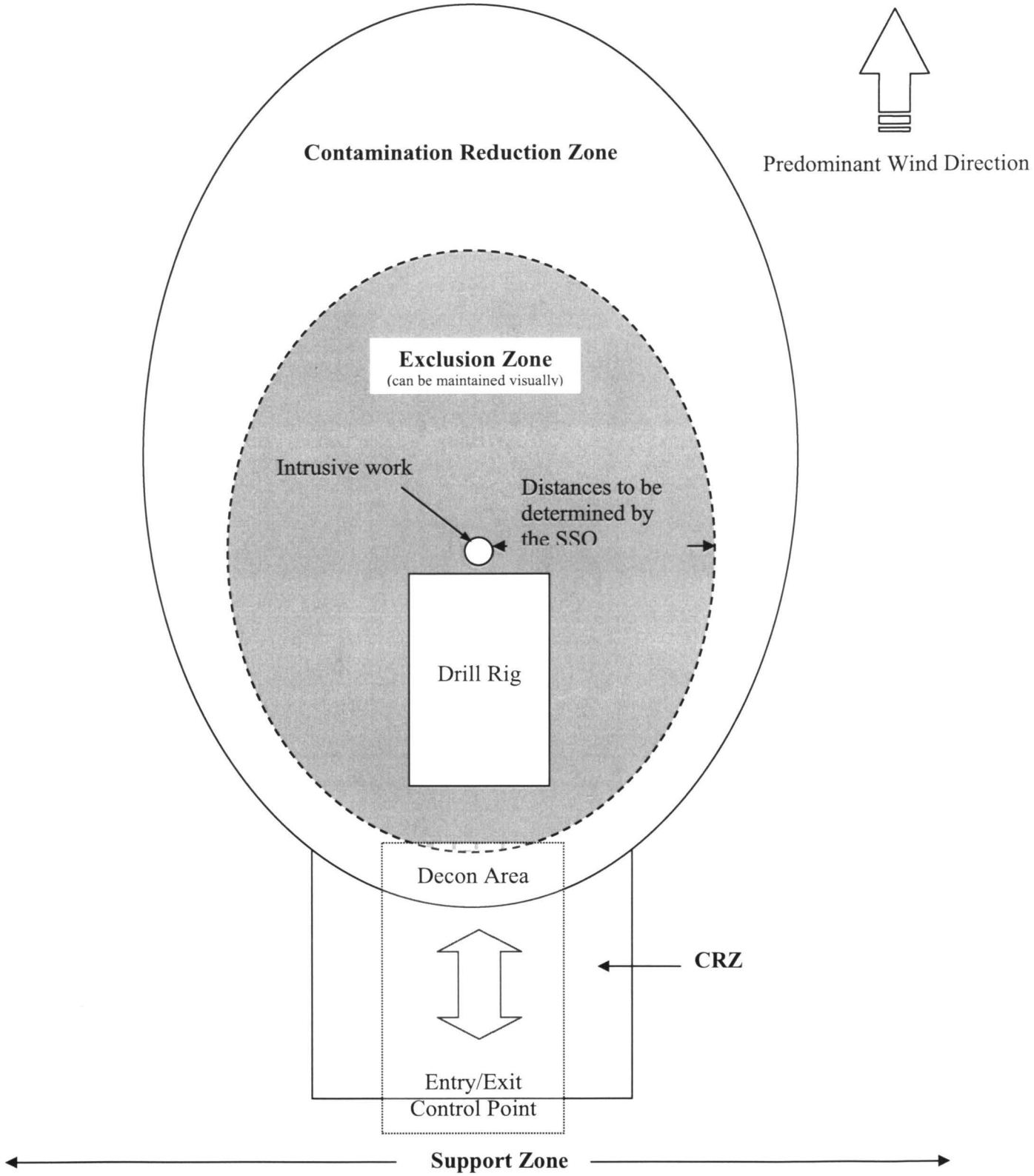
To maintain site security during working hours:

1. Maintain security in the Support Zone and at access control points.
2. Establish an identification system to identify authorized persons and limitations to their approved activities.
3. Assign responsibility for enforcing authority for entry and exit requirements.
4. When feasible, install fencing or other physical barrier around the site.
5. If the site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
6. Have the PM approve all visitors to the site. Make sure they have valid purpose for entering the site. Have trained site personnel accompany visitors at all times and provide them with the appropriate protective equipment.

To maintain site security during off-duty hours:

1. If possible, assign trained, in-house technicians for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.
2. If necessary, use security guards to patrol the site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.
3. Enlist public enforcement agencies, such as the local police department, if the site presents a significant risk to local health and safety.
4. Secure the equipment.

Figure 8-1: Drilling Site Control Layout



9.0 EMERGENCY RESPONSE PLANNING

9.1 EMERGENCY ACTION PLAN

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared for this project should such critical situations arise. The only significant type of onsite emergency that may occur is physical injury or illness to a member of the Earth Tech team. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities.

Three major categories of emergencies could occur during site operations:

1. Illnesses and physical injuries (including injury-causing chemical exposure)
2. Catastrophic events (fire, explosion, earthquake, or chemical)
3. Safety equipment problems

9.1.1 Emergency Response Coordinator

Prior to beginning site activities, the PM will complete Table 9-2 by filling in the names of the Emergency Coordinator (EC) and the alternate EC. The duties of the EC and the alternate EC have been specified in SH&E 003.

9.1.2 Site-Specific Emergency Procedures

Prior to the start of site operations, the EC will complete Table 9-1 with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 9-1: Emergency Planning

Emergency	Evacuation Route	Muster Location
Chemical Spill	• Upwind	• Leave Site and meet in safe zone.
Fire/Explosion	• Most direct route to safe location	• Leave Site and meet in safe zone.
Lightning	• Most direct route to safe location	• Vehicle
Additional Information		
Communication Procedures	Visual contact and cell phone	
CPR/First Aid Trained Personnel	EMS	
Site-Specific Spill Response Procedures	No spills anticipated due to nature of job	

9.1.3 Spill Containment Procedure

Due to the nature of the work, there is not expected to be any potential for spills. Therefore, no specific spill response materials or equipment are required.

9.1.4 Accident/Incident Reporting

All accidents and incidents that occur on-site during any field activity will be promptly reported to the SSO and the Site Supervisor in accordance with SH&E 101, *Injury, Illness, and Near-Miss Reporting*, or the appropriate District-level incident reporting procedures (i.e., Near-Miss Reporting Program).

If any AECOM employee is injured and requires medical treatment, the Site Supervisor will contact **AECOM Incident Reporting Line at (800) 348-5046 immediately**. The Site Supervisor will initiate a written report, using the ***Supervisor's Report of Incident*** form (see SH&E 101). The Site Supervisor will complete the first two sections of this form and forward to the PM for completion of Section 3. The report will then be provided to the Safety Professional before the end of the following shift. **The new AECOM Environment incident reporting procedures require that Project Managers/Supervisors and SH&E Personnel must be notified by direct verbal contact and must follow the procedures outlined in SH&E 201.**

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSO within 24 hours after the accident has occurred.
All accidents/incidents will be investigated in accordance with SH&E 102, *Incident Investigation & Review*. Copies of all subcontractor accident investigations, whether accomplished in accordance with their own procedures or SH&E 102, will be provided to the SSO within five (5) days of the accident/incident.

Table 9-2: Emergency Contacts

Emergency Coordinators / Key Personnel			
Name	**Title/Workstation**	**Telephone Number**	**Mobile Phone**
Leslee Alexander	Project Manager	(864) 234-2282	(864) 423-2107
Keith Owens	Site Supervisor / SSO	(865) 220-7755	(865) 604-6695
Harold McDaniel Russ Reynolds	Safety Professional	(256) 767-1210 (864) 234-3042	(256) 366-7650 (864) 906-7309
Incident Reporting	Incident Reporting Line	(800) 348-5046	
Leslee Alexander	Emergency Coordinator (EC)	(864) 234-2282	(864) 423-2107
Russ Reynolds	Secondary EC	(504) 812-5363	

Organization / Agency	
Name	**Telephone Number**
Police Department (local)	911
Fire Department (local)	911
State Police	911
Ambulance Service ***(EMT will determine appropriate hospital for treatment)***	911
Emergency Hospital	
Helena Regional Medical Center 1801 Martin Luther King Jr Dr, Helena, AR 72342	(870) 816-3961
Hospital Route: See Directions below	
Poison Control Center	(800) 222-1222
Pollution Emergency	(800) 292-4706
National Response Center	(800) 424-8802
SARA Title III Hotline	(800) 535-0202

Public Utilities	
Name	**Telephone Number**
Arkansas One-Call	(800) 482-8998

Figure 9-1: Hospital Route

1. Head **east** on **Route 49/AR-185/AR-242/Plaza** toward **S 4th St/S Fourth**
2. Turn **right** at **S 4th St/S Fourth**
3. Turn **left** at **AR-185/AR-242/S Sebastian**
4. Turn **right** at **Russell Ave**
5. Continue on **Mooney Ave**
6. Turn **left** at **AR-49/MLK Jr Dr E/Panama Rd E**
   Continue to follow AR-49
7. Continue on **Martin Luther King Dr/US-49**
   Continue to follow US-49
   Destination will be on the right

10.0 PERSONNEL ACKNOWLEDGEMENT

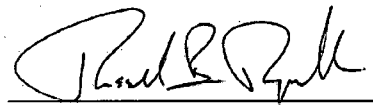
By signing below, the undersigned acknowledges that he/she has read and reviewed the AECOM Health and Safety Plan for the Former Cedar Chemical Company in West Helena, Arkansas. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein.

PRINT NAME	SIGNATURE	ORGANIZATION	DATE

HEALTH AND SAFETY PLAN APPROVAL

This Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards which may be encountered during the completion of this project, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury.
By signing below, I acknowledge that I have reviewed and hereby approve the HASP for the Former Cedar Chemical Company in West Helena, Arkansas. This HASP has been written for the exclusive use of AECOM employees and subcontractors. The plan is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

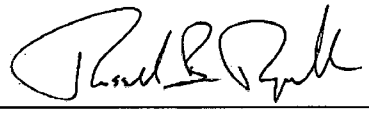
Written by:



02/26/2009
Date

Russell Reynolds
Safety Professional
(864) 906-7309

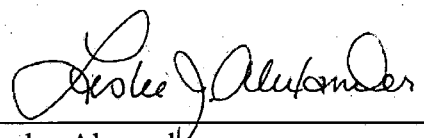
Approved by:



02/26/2009
Date

Russell Reynolds
Safety Professional
(864) 906-7309

Concurrence by:



02/27/09
Date

Leslee Alexander
Project Manager
(864) 234-2282

THAs

AECOM

Task Hazard Analysis (THA)
Supplemental Soil Investigation
Former Cedar Chemical Facility
West Helena, AR

Evaluated by: Russ Reynolds **Date**: 2/26/2009

TASK NAME

DRILLING (GEO-PROBE DRILL RIG)

TASK DESCRIPTION

Five soil sampling locations will be installed within the subject property via a Geoprobe drill rig. Utilities will be cleared at the site through the AR one call and metal detector will be used as a secondary cautionary procedure to identify sub-grade obstructions.

CHEMICAL EXPOSURE HAZARDS

Dinoseb and possibly:

- VOCs
- SVOCs
- Metals
- Pesticides

PPE

Level D (see Table 6-2 for upgrade/downgrade criteria)

- Protective chemical gloves
- High-visibility reflective safety vest
- ANSI approved hardhat
- ANSI approved safety glasses
- ANSI approved steel toe safety boots
- Ear plugs
- Tyvek cover-alls when in contact with Dinoseb impacted soils

OTHER SAFETY EQUIPMENT

- Leather gloves while handling sharp edges or operating powered tools/machinery
- SPF 15 sunblock when working outdoors
- Equipment decontamination supplies
- First aid kit (located in vehicle)

PHYSICAL HAZARDS

- Drilling rig operations
- Manual lifting, overexertion
- Slip, trip, and falls
- Heat/cold stress
- Severe weather/sunburn
- Heavy equipment
- Hazardous noise
- Overhead hazards
- Pinch points
- Push/pull

APPLICABLE OPERATIONAL SAFETY PROCEDURES

- SH&E 201 – *Incident Reporting*
- SH&E 403 – *Drilling*
- SH&E 404 – *Manual Lifting*
- SH&E 508 - *Fire Extinguishers*
- SH&E 513 - *Heavy Equipment*

ADDITIONAL SAFETY CONSIDERATIONS

- Evaluate surrounding work area for additional hazards that may be present.
- All loads in excess of 49 pounds require use of mechanical aids or assistance from other personnel.
- Always ensure that the equipment operator can see you at all times. Never assume he can see you. Always yield to heavy equipment.
- Establish safe distances from drill rig (refer to HASP).
- Ensure functionality of "kill switch" and that equipment is inspected and in working order.

MONITORING PROCEDURES

Based on Section 6.0 of the HASP.

Subcontractor Safety

EARTH TECH | AECOM	PROCEDURE NO. SH&E 403
	DATE March 11, 2005
Safety, Health & Environmental Procedure	REVISED August 15, 2008
Drilling	PREVIOUSLY ENV 521

This procedure applies to all U.S.-based personnel, projects, offices, business units and activities. Any exceptions to this procedure must be approved, in writing, by the responsible District/Business Unit Manager and Safety Manager.

1.0 PURPOSE

All drilling operations must conform to the procedures outlined below. Drilling operations include, but are not limited to, rotary, hollow-stem, and direct-push drilling.

2.0 GENERAL SAFETY GUIDELINES

- Use common sense, while maintaining a "safety-first" attitude at all times.
- Know the location of underground and overhead utilities.
- Use required personal protective equipment (PPE); do not wear loose-fitting clothing or jewelry. Keep hair tied back and tucked into hardhat.
- Do not touch or go near moving parts.
- Be aware of the location of "Emergency Shut Off" switches.
- Be aware of potential contaminants. Always wear required PPE and follow appropriate decontamination procedures.
- In the event of an accident, allow properly equipped and protected personnel to respond. Immediately leave the area.
- Do not smoke or use spark-producing equipment around drilling operations.
- No food will be consumed or stored in the work area.
- Do not work around a drill rig during a thunderstorm or rain.
- Maintain orderly housekeeping on and around the drill rig. Store tools, materials, and supplies to allow safe handling by drill crewmembers. Proper storage on racks or sills will prevent spreading, rolling, or sliding. Avoid storage or transportation of tools, materials, or supplies within or on the drill rig derrick.
- Maintain working surfaces free of obstructions or potentially hazardous substances.
- Store gasoline only in containers specifically designed or approved for such use.
- Fire fighting equipment should not be tampered with and should not be removed for other than the intended fire fighting purposes or for servicing.
- The departing driller should inform the oncoming driller of any special hazards or ongoing work that may affect the safety of the crew.

- Rigging material equipment for material handling should be checked prior to use on each shift and as often as necessary to ensure it is safe. Defective rigging should be removed from service.
- Work areas and walkways should not be obstructed. The area around the derrick ladder should be kept clear to provide unimpeded access to the ladder. The rotary table of the rig floor shall be kept free of obstructions and free of undue accumulation of oil, water, ice, or circulating fluids.
- Passengers shall only be allowed in vehicles designed for passenger use. Do not ride on the outside of drill rigs, trailers, or other equipment.

3.0 PRE-OPERATIONAL PROCEDURES

The following procedures shall be take place prior to performing drilling operations.

3.1 Utility Clearance

Earth Tech and/or its subcontractors will determine the location of all underground/overhead utilities before drilling operations take place. The project team must perform a subsurface utility clearance using appropriate methodologies (State Dig-Alert service – 811, review of site as-built drawings, geophysics testing, physical survey, etc.). If intrusive work is required inside of the clearance limits for any utility mark-outs (these vary by provider and methodology), a specific work procedure must be developed and reviewed by the SH&E Professional assigned to the project.. For drilling operations outside of the United States, contact the local utility companies for clearance.

For areas that are not covered by One-Call Centers or local utility companies (i.e., client specific utilities), clearance must be obtained from the client. In addition to obtaining utility clearances, the appropriate party will make a utility survey of each drilling point. The utility survey shall include both magnetometer and ground-penetrating radar survey. Documentation that nearby utilities have been marked on the ground and that the drill site has been cleared shall be kept in the project trailer/support vehicle and communicated to the drilling subcontractor. All utilities shall be identified on a job hazard analysis and communicated to all drilling and drill support personnel.

3.2 Drill Rig Inspection

Prior to the start of site work each day, the drilling subcontractor will inspect all drilling equipment. The inspection will be documented in the field records, and the records will be maintained at the site. If the drill rig owner or operator does not have a company-specific inspection form, use or reference the attached "Drill Rig Safety Inspection Checklist" form. The drilling equipment inspection must be repeated on a daily basis. Defective equipment shall be repaired prior to use.

3.3 Maintenance

The following are minimum specifications for performing maintenance on drilling equipment:

- Safety glasses shall be worn, at a minimum, when performing maintenance on a drill rig or on the drilling tools.
- Follow all manufacturers' recommendations for maintenance on drilling equipment.
- The drill rig engine shall be shut down before making repairs or adjustments to a drill rig or lubricating fittings (except repairs or adjustments that can only be made with the engine running). The operator shall remove keys and tag out the ignition. All systems (i.e., drill rotor, engine, pressurized lines, etc.) shall be at a "zero energy state" before performing maintenance.
- The leveling jacks shall be lowered, the wheels chocked, and the hand/parking brakes set before working under a drill rig.

4.0 OPERATING PROCEDURES

The following procedures shall be recognized during the operation of drilling equipment.

4.1 Moving Drilling Equipment

- Lower drilling mast before moving rig.
- Secure all loads to rig prior to off-road mobilization.
- Inspect the route of travel prior to moving the drill rig off-road. Be aware of holes, rocks, trees, erosion, and uneven surfaces.
- Remove all passengers from the cab before moving drill rig onto rough or sloped terrain.
- Engage multiple drive power trains (when available) on rig vehicle when mobilizing off-road.
- Travel directly up or down grade on slopes when feasible. Avoid off-camber traverse approaches to drill sites.
- Approach changes in grade squarely to avoid shifting loads or unexpected unweighting.
- Use a spotter (person at grade) to provide guidance when vertical and lateral clearance is questionable.
- Use parking brake and chock wheels when grades are steep.

4.2 Raising The Derrick (Mast)

- Locate visually, overhead utilities prior to raising the mast.
- Treat overhead electrical lines as if they were energized and maintain at least a 40-foot clearance.
- Earth Tech will contact appropriate utilities agency to manipulate and deactivate overhead service in areas that interfere with drilling operations. Do not attempt to handle utilities.
- Stabilize and level each work site prior to drill rig setup. Do not drill on slopes near powerlines, including drainage ditches, trenches, excavations, and other holes. Drill rig could tip over, resulting in contact with power lines.
- The derrick must not be raised until the rig has been blocked, leveled (leveling jacks down), and chocked.
- Secure and lock mast according to manufacturer's recommendations prior to drilling.
- If required to perform work on the mast at heights above six feet, a full body safety harness and lanyard shall be worn accordingly.
- Note wind speed and direction to prevent overhead utility lines from contacting rig derrick. Allow at least a 40-foot clearance between rig mast and utility lines, unless authorized by the SH&E department to operate at a shorter clearance distance.

4.3 Drilling

- If Earth Tech personnel perform drilling (i.e., direct push, Geoprobe®), follow the manufacturer's operational or field manual's safety guidelines/specifications.
- Only authorized and trained drill rig operators shall operate a drill rig. Drill rigs shall be setup and operated according to manufacturer's specifications.

- Set up and delineate appropriate work zones. This may include an exclusion zone, contamination-reduction zone, and a support zone. When feasible, work zones shall be cleared of obstructions and leveled to provide a safe working area.
- Establish a communication system between driller, helpers, and other field support personnel for responsibilities during drilling operations.
- All personnel shall be instructed to "stand clear" prior to and during startup. Personnel shall stay as far away as possible from operating equipment, especially if rig is located on unstable terrain (drilling operations shall not proceed on unstable ground).
- Begin auger borings slowly with the drive engine operating at low speed.
- Keep hands and feet clear of rotating augers and direct push equipment.
- Prevent placing hands or feet under auger sections during hoisting over hard surfaces.
- Avoid the removal of spoil cuttings with hands or feet.
- Assure drill rig is in neutral and the augers are not rotating before cleaning augers.
- Wear hearing protection as required.

4.4 Subcontractor Guidelines

Subcontractors shall discuss company-specific standard operating procedures (SOPs) for health and safety with Earth Tech field supervisors prior to the start of drilling operations. Subcontractor SOPs may include procedures for hoisting operations, cat line operations, pipe handling, derrick operations, making and breaking joints, etc.

5.0 ATTACHMENT

Attachment 1 - Drill Rig Safety Inspection Checklist

6.0 REFERENCES

SH&E 112 – *Respiratory Protection Program*

SH&E 113 – *Personal Protective Equipment*

SH&E 301 – *Hazardous Waste Operations (HAZWOPER)*

SH&E 310 – *Overhead Electrical Lines*

SH&E 604 – *Decontamination*

EARTH TECH | AECOM

Drill Rig Inspection Checklist

Date	Equipment Model/Type:
Project Name:	Serial or License #
Project #	Location Owner/Operator:
Project Manger:	Inspector:

Place a (✓) in the "Yes" column if the requirement has been met. If a "No" is encountered, equipment must be removed from operation until the deficiency has been corrected. Describe deficiencies on page two of this form. Use the Comment column to note any additional information needed to certify the equipment. If a checklist item is found to be "Not Applicable," check "NA" and provide a comment in the appropriate box.

Item Name	Requirement	Yes	No	NA	Comment
Hydraulic systems controls and levers	No leak fittings or connections. Levers are in good operating condition. Fluid levels are full.				
Fuel, oil, water, and coolant lines	No leaks.				
Hoses	No leaks in hoses or connections. No signs of excessive wear, kinked or bent hoses.				
Gauges	Operational and visible to operator.				
Emergency kill switch and life line	Operational and accessible to operator.				
Shear pins	In place.				
Drive chains	No signs of excessive wear, broken or defective links.				
Parking brakes	Set and operational.				
Outriggers	No leaks. Set on pads (as necessary to avoid damage).				
Windshield Wipers	Operational.				
Lights (head, tail and running lights)	Operational and without cracked lenses.				
Back-up alarm	Operational, spotter used.				
Cables and ropes	No fraying, birdnesting, flattening, stretching. Must be braided or properly clamped at connections.				
Pulleys, drums and spools	No excessive wear or cracking.				
Derrick/Mast	Locked in position. Frame is not cracked or bent.				

Drill Rig Inspection Checklist

Item Name	Requirement	Yes	No	NA	Comment
Hoists	Properly spooled cable, rated to lift loads.				
Safety equipment	Safety harness, fire extinguisher, flares, safety reflectors, first aid kit, grounding wire for fueling, and spill response equipment (for fueling and repairs).				
Guards	Power take-offs (PTOs) and all rotating parts designed with guards. Guards must have warning labels.				
Miscellaneous (as applicable)	Diverter systems; auger and head seals; cyclones; grout plant guards; etc. (list): • • •				

DEFICIENCIES (Explain all negative response and list corrective actions; all deficiencies must be corrected before the rig is entered into service):

1.
2.
3.
4.
5.

Other Repairs, Routine Maintenance and/or Comments:

Inspection Conducted and Certified by:

	Print Name:	Signature	Date:
Owner / Operator			

Checklist Reviewed by:

	Print Name:	Signature	Date:
Earth Tech PM or SSO			

ADEQ

ARKANSAS
Department of Environmental Quality

Hand Delivered Mail Receipt

Date	3-5-2009
Division	Haz Waste
Sender	Ann Faitz, Attorney at Law
Received By	Tammie Hynum

Attached is the Site Specific Health & Safety Plan for SI activities at Former Cedar Chemical Facility